Problem. Like many colloquial speech varieties, Levantine Arabic is characterized by variation at every level of structure. At the phonological level, final CC# clusters with rising sonority have epenthesis (e.g., /ʒisr/→[ʒisi̲r] 'bridge'), but in falling and flat sonority clusters epenthesis is optional and variable (/bint/→[bini̲t] or [bint] 'girl,' see (1)). Our previous work on one Levantine variety, Lebanese, established that at the phonetic level, epenthetic vowels tend to be shorter and backer than lexical vowels in the same contexts (e.g., /libs/→[libi̲s] 'clothes' vs. /libis/→[libi̲s] '(he) wore'). This was also variable—some speakers showed a greater difference than others, and some speakers did not appear to differentiate. The phonetic distinction between epenthetic and lexical vowels corresponds to a phonological one. Lebanese has an opaque interaction between stress and epenthesis: epenthetic vowels are not stressed (e.g., /ʔalf-na/→[ʔá.li̲f.na] 'our thousand') in the same contexts where lexical vowels are (/ʔalif-na/→[ʔa.líf.na] 'our letter alif'). In another Levantine variety, Palestinian, this stress-epenthesis interaction is not always opaque: some speakers stress epenthetic vowels (Kiparsky 2002, Palva 1965). Is there a connection between opaque stress-epenthesis interactions and a phonetic distinction between lexical and epenthetic vowels?

The present study. We conducted an acoustic study of eight speakers of Palestinian Arabic in Haifa, Israel. Speakers read near-minimal pairs of words that had the underlying shape /CVCVC/ or /CVCC/, written in a consonantal script. The words were matched for everything but the first consonant and the presence or absence of a lexical vowel, e.g., /dibs/ 'syrup' vs. /jibis/ 'dried up.' Each speaker read 64 test words (32 pairs), embedded with fillers in a list of 160 words altogether. We kept track of whether and where speakers epenthesized vowels. We also measured the vowels' duration, formants, and intensity in Praat. *We found that Palestinian Arabic speakers epenthesized more often than Lebanese Arabic speakers do in similar words. There is no statistically significant difference in Palestinian in vowel quality, intensity, or duration between epenthetic and lexical vowels.*

Discussion. Palestinian differs from Lebanese in two ways: epenthesis is more productive, and the epenthetic vowel is not reliably different from lexical vowels in similar positions. These phonological and phonetic differences correspond to a higher-level phonological difference: Lebanese speakers apparently never stress epenthetic vowels, whereas Palestinian speakers sometimes do. This difference between the two Levantine varieties of Arabic sheds light on the problem of learning opaque stress-epenthesis interactions (Alderete and Tesar 2002). Alderete and Tesar observe that the learner can account for all the patterns in an opaque stress-epenthesis system by overgeneralizing and treating deviations from default stress as lexical exceptions, which means that the learner will fail to learn the more restrictive stress-epenthesis system. We suggest that this is actually what is happening in the non-idealized linguistic setting of Palestine. We propose that phonetic variability in the realization of an epenthetic vowel is key to positing the correct vowelless underlying representations. To get the relevant information, learners must pay attention to the behavior of the linguistic community. Because learners are exposed to less phonetic and phonological variation of the relevant kind, they fail to attribute the exceptional stress patterns to the presence or absence of a vowel. Instead, words are assumed to have lexical vowels, and the otherwise unexplainable stress differences are learned as lexical exceptions. Hence, our account gives a new way to model the diacronic change from opaque stress-epenthesis interaction to transparent stressing of epenthetic vowels—a model in which phonetic and phonological variation determines the learnability of different grammars.

(1) Variation in Palestinian epenthesis (data from 8 speakers)

UR	No epenthesis		Epenthesis		
/siʒn/	*siʒn	0	siʒi̲n	8	'prison'
/nimr/	*nimr	0	nimi̲r	8	'tiger'
/kizb/	*kizb	0	kizi̲b, kiðib	8	'falsehood'
/kils/	kils	5	kili̲s	3	'whitewash'
/ʒild/	ʒild	4	ʒili̲d	4	'leather'
/bint/	bint	3	bini̲t	5	'girl'
/libs/	lips	3	libi̲s	5	'clothes'
/dibs/	dips	7	dibi̲s	1	'syrup'
/alf/	alf	7	ali̲f	1	'thousand'

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